



Ø BEAT



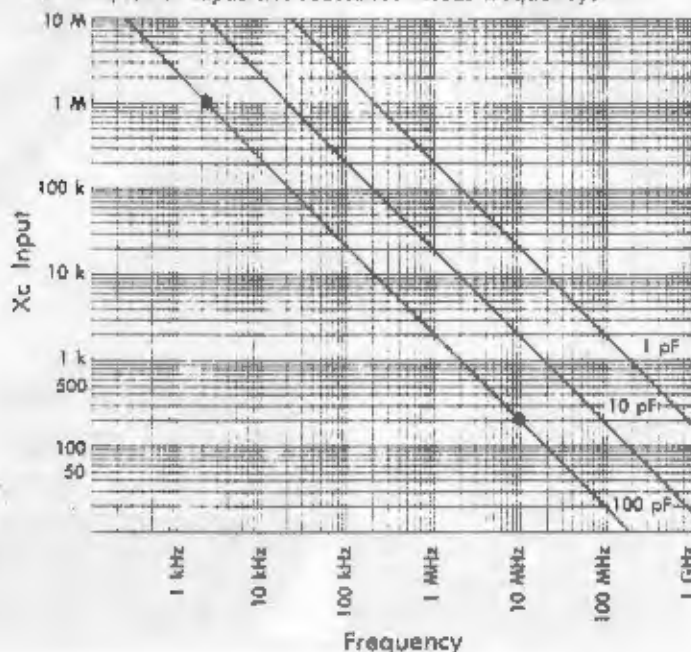
COLO. SPRINGS,
COLORADO

AUGUST 1980

It's a bird . . . it's a plane . . . it's Superprobe!

YOUR OSCILLOSCOPE NEEDS A GOOD PROBE

When using an oscilloscope for troubleshooting, particularly in high frequency circuits or fast logic, the use of a low capacitance for wideband scopes ranges from about 20 picofarads to greater than 50 picofarads. While 50 picofarads may seem small at first, you need only try to measure in an RF circuit to see its effect. All this assumes no cable capacitance from the oscilloscope to the circuit under test. If we add 3 feet of cable with 30 picofarads per foot capacitance we soon exceed 100 picofarads total shunt capacitance and most likely kill any signal we were looking for. The figure shows a plot of capacitive reactance versus frequency.



Capacitive Reactance as a Function of Frequency

The normal input resistance for a scope is 1 megohm. The figure shows that at slightly over 2 KHz the combined parallel impedance of the 1 megohm input resistance and 100 picofarad shunt capacitance has dropped to 500 K ohms (remember the formula for the two equal resistors in parallel?). At 10 MHz the probe and scope combination has an equivalent input impedance of only 200 ohms.

All this discouraging talk could lead one to pull out his hair (thats my problem anyway) if it wasn't for "Super Probe".

The technique used to reduce the shunt capacitance to an acceptable low value is to put a 10 to 1 divider right at the probe tip. The 10 to 1 divider probe has the combined advantage of decreasing the capacitance and increasing the resistance. Typical values for a 10 to 1 probe would be 10 Pf shunt capacitance and 10 megohm resistance. As usual however these values can vary from probe to probe type and manufacturer to manufacturer. The disadvantage or "the price you have to pay" for the low capacitance is of course a reduction in signal amplitude of 10. Actually probes are available with attenuation ratios ranging from 1 to 1 to 100 to 1.

One more thing to remember or be aware of when using an oscilloscope and probe around high power RF such as that encountered in a ham shack is the scope input and probe have very reduced ratings at RF. There is no fast rule of thumb to quote here, just remember when measuring high RF voltages (greater than 10 volts above 10 KHz) make the measurement quick or have plenty of marshmallows handy.

More on probing in another issue.

Ray, AAØL

P.P.R.A.A. DIRECTORS

PRESIDENT	*Don Lohse KBØKQ 1410 E. LaSalle 80907	635-7469
V. PRESIDENT	*Dave Vierling NØDV 2511 N. Tejon 80907	473-0293
SECRETARY	Lorna Schleuter WDØBTF Box 38 Grn. Mtn. Falls 80919	684-2153
TREASURER	David Riese WBØSDW 5102 Galley 80915	574-2224
Board Member	Frank Freiler WBØPAJ 411 Lakewood Cir. 80910	x208 596-6800
Board Member	Art Mayer WAØAEH 3032 Drakestone Dr. 80909	635-7223
Board Member	*Ray Uberecken AAØL 9635 Thoroughbred Ln. 80908	495-3544
Board Member	*Charleen Colvin WBØYOB 4610 Topaz 80918	598-7704

(* Two-year board terms began November 1979)

ZERO BEAT is published monthly in the interest of the members of the Pikes Peak Radio Amateur Association, Colorado Springs, CO. Permission is given to reprint articles or excerpts provided credit is given. Deadline for submission of articles to be published is the third week of the month. Classified accepted anytime.

The Pikes Peak Radio Amateur Association meets on the second Wednesday of every month at Sabin Jr. High School, 3605 N. Carefree Circle at 7:30 p.m. and all amateurs and interested persons are cordially invited.

Editor: Jim Colvin NØAVY, 4610 Topaz, Colorado Springs, Colorado, 80918 598-7704

JULY MEETING MINUTES

The Pikes Peak Radio Amateur Association meeting was called to order by Don Lohse KBØKQ, President, at 7:30 P.M., July 9, 1980 at Sabin Jr. High School.

The minutes of the June meeting were approved as printed in ØBeat.

David Riese, WBØSDW, gave the following treasurer's report: As of July 9, 1980 the balance in the treasury is \$728.57 with \$77.55 in SERVCOM.

Don KBØKQ thanked Smitty, WBØLTV, for the signs he furnished for the Field Day.

Dave Vierling, NØDV, gave a report on the Field Day held June 28 and 29. The novice station set a new club record with 199 contacts; the HF station made 1035 contacts on 20 meters (not duped yet) operating the full 24 hours; the VHF station made 106 or 108 contacts on 6 meters including almost all states and a KP4 from Puerto Rico. The event was very successful and lots of fun including good weather. Dave thanked the people who worked to make it a success. About 35 hard core participants stayed from beginning to end, however, there were probably a total of 60 people at Field Day during the 24 hour period. The forest service did have to stop by and announce the ban on open fires Saturday morning which changed some plans for meals. Thanks again to all the loyal hard workers that helped Dave.

The club members who assisted with the Spring Spree and the Gazette Telegraph 10 Mile Run were thanked by Don KBØKQ.

As a result of more and more demands for public service the board felt it will be necessary to form a standing committee for scheduling participation in major events and for a technical crew. The technical crew would make up a troubleshooter's box to take to events.

IARU Radiosport Championships coming up. Forms were circulated and information given to those present.

Two meter bootleggers are on the air again and someone is using the autopatch late at night.

The need for official observers was discussed by Bob, KØDJ. Bill Allen, NØATE, asked for an explanation of the official observer position.

It was unanimously decided to give Ken, WØTGL, credit for the dinners he bought for Wayne Greene and Sherry during the National Sports Festival, the amount being given in form of credit with the club.

Volunteers for the regatta at Woodmoor Lake were needed for Sunday, August 13. The hours were from 10 A.M. to 2 P.M.

The person who was to present the program had to leave town on business. Ray, AAØL, provided us with an excellent discussion of the upcoming Central States VHF Society Conference. He also conducted a most interesting question and answer session on noise figure measuring and antenna measuring.

The meeting adjourned at 10 P.M.

Respectfully Submitted,
Charleen WBØYOB
for Lorna WDØBTF



GTB SYLVANIA
ECG SEMICONDUCTORS



Channel Master
THORDARSON

COLORADO SPRINGS
WALKER ELECTRONICS
2838 NORTH PROSPECT ST.
COLORADO SPRINGS, COLORADO 80907
PHONE - (303) 636-1661

CHEMICALS—TOOLS
WIRE AND CABLE
SERVICE AIDS

WHOLESALE DISTRIBUTORS
EXPERIMENTERS ITEMS
HEADPHONES—SPEAKERS
ANTENNA INSTALL MATERIAL

MICROPHONES



LEADER
Instruments Corp.
Communications Division



Regency
performed in Australia

FIELD DAY 1980

Well, Field Day 1980 is now a pleasant memory. Already we're looking forward to the next one. A great time was had by all and for many, F.D. is now solidly on their calendar as a "Must Not Miss" event.

This year we were treated to an outstanding weekend weatherwise with temperatures in the 80's and beautiful, clear, moonlit nights. Quite a contrast to last year's hail and rain. One minor problem was the ban on open fires imposed by the Forest Service to preclude any fire problem in the dry woods. This put a damper on the Sunday Morning Breakfast that was to have been hosted by the novices. We're looking forward to that also.

We held F.D. at the Rampart Range site used in the past. This year we had a VHF station, HF phone station, HFCW station and a Novice station. Also had a lot of fun with a QRP station powered by a solar panel.

Propagation was very strange. 10 and 15 meters were all but useless. Very little activity on 10 and long skip on 15. The phone station therefore spent most of its time on 20 and racked up an impressive 907 QSO's on that band alone. Lots of operators got their taste of sifting through a pile-up and loved every minute of it. I think they learned a thing or two. The VHF station had good luck with many QSO's via both single and double hop. Worked KP4 and W2 stations as well as most states. Had 107 QSO's on 6 meters and gave many who thought 6 was a local band a new interest. Learning how to make those contacts when QSB is minimum is a true art. In all, 1090 QSO's were made on phone, a new club high.

The CW station did well considering conditions. The L.W. antenna enabled 207 QSO's on 40 meters so that we didn't have to compete with phone on 20. Other bands were about equally divided. Only the temporary loss of a set of finals kept it from running the full 24 hours.

A high point of the weekend was the nicely set-up and efficiently run novice station. Approximately 12 showed up with high hopes and shattered the old novice QSO record. They made 199 QSO's and were more enthusiastic every hour. Many hams from Woodland Park helped in this effort.

I would especially like to thank all who spent much time and effort to make F.D. a success. Many thanks to those who supplied equipment and other gear for our use. Of course the success would have been incomplete without the turn-out of so many interested and helping hams. Hopefully more can join in the fun next year.

If you have any ideas or suggestions for next F.D. please let us know — perhaps an all QRP effort, more stations, or an intense satellite try are in order. You name it. Again, thanks to all. Hope to see you there next June.

Dave, NØDV

WANTED: Antenna matcher minimum 300 watts in good condition; multi-band mobile antenna 80-10 may consider single band type. Also . . .

FOR SALE OR TRADE: HyGain 5BDQ Trap Dipole cut for general phone portions — all hardware & manual. Please contact Don WDØBSZ at work 8 AM-4 PM phone 471-8522, home 1-683-2883. El Paso County Phone Co.

If it's CW, it's communications.

832-
1111

ALL MAJOR BRANDS
SALES-SERVICE
8-5:30 Mon.-Fri. 8:30-1 Sat.

832-
1111



WOODMOOR SAILING REGATTA

WDØHCO, Biz; WDØHCL, Norm; NØBZ, Tom; WB2ZLH, Rob and KBØHW, Lee, handled communications for the first annual Lake Woodmoor Sailing Regatta, Sunday July 13th, at Monument. The event was held as a fund raiser for Muscular Dystrophy. No emergencies occurred to spoil the fun of approximately 20 sailors and 150 to 200 spectators. Everyone had an enjoyable time! (Including an hour of pouring rain.)

BOARD MINUTES

The board met at 7:30 P.M., July 7, 1980 at the home of Jim, NØAVY, and Charleen, WBØYOB, Colvin at 4610 Topaz Dr. Those present were Don, KBØKQ; Dave, NØDV; Frank, WBØPAJ; Jim, NØAVY; and Charleen, WBØYOB.

Dave, NØDV, reported that all went well at the Field Day. Les Borst did a fine job getting the generator to function well throughout the time allotted. The solar unit loaned by Kaman Sciences worked really well.

Dave Acree, WBØMBZ, regretted that the person to give the program for the July meeting would not be available. Ray, AAØL, graciously volunteered to talk about the Central States VHF Society Conference and have a question and answer type program.

Hams have been asked to handle the motorcycle portion of the Pikes Peak Hill Climb. This request prompted the discussion of the need for a standing committee to handle requests for scheduling events and workers for these events. The need for a troubleshooter's box for technical repairs at events was discussed. It was decided this would be one of the functions of the scheduling committee. This committee would be a public relations type committee and would establish a framework and guidelines for handling the events.

Need to start thinking about scheduling and instructors for this fall for novice and upgrade classes.

The next meeting will be at 7:30 P.M., Monday, August 4 at the home of Don, KBØKQ, and Joyce, KAØGJN, Lohse at 1410 E. LaSalle St.

Respectfully Submitted,
Charleen, WBØYOB

A.E.S. Communications

404 Arrawanna
Colorado Springs, CO 80909
475-7050

- AMPHENOL
- DENTRON
- CUSHCRAFT
- ASTATIC
- ARRL & AMECO BOOKS
- HUSTLER
- TURNER
- HYGAIN
- LARSEN
- VHF ENGINEERING
- NYE VIKING
- TEMPO
- YAESU
- KENWOOD
- SERVICE AVAILABLE •

TRADE-INS & CONSIGNMENTS WELCOME
VISA/MASTERCHARGE

9 — 5:30 Monday — Friday 9 — 1:00 Saturday
DAVE WDØCDU • JERA NØAGT

FOR SALE:

Conar 400 Transmitter, Conar 500 Receiver, Heath VFI VFO
→ Works good — \$90/offer, Mike KAØGMO, 390-6808

Wilson 1405 HT, Remote spkr/mic, xtra crystals, carrier, desk
charger, TT pad, BNC adapter. \$200 offer, WØMBZ 597-0361

FOR SALE: S.B.E. Transceiver, 165 watts — Transmit single
tone — AC or DC. Base or mobile — 15-80 meters, \$125.00.
YAESU 101-B fan, etc. \$475.00. Perfect shape, new spare
finals — have digital readout for it. Or make offer. YAESU
101Z — Absolutely perfect: 10 hours use — \$598.00. Contact
WA6SDD Leon H. Solomons, 3615 Regis St., 574-5535.

FOR SALE: 60 Ft. Freestanding tower. Unassembled and
ready to haul. \$400. Warren WBØSJR 633-6161 or 635-7469.

ANTENNA FARM!

Three Cabins suitable for
HAM SHACK OR SHOP, electric
power hooked up, 3.62
beautifully treed acres—close
in—view of Peak—Mobile Homes
permitted. Good terms and
priced right! Call
LEE MARTIN, KBØHW
488-2381 or 481-2231



de the President

As those of you who attended the last meeting heard, the Board has made a decision to form a public service committee to coordinate all of the public service projects of the club. This does not mean that the people are the only ones who will work on these projects. Far from it. We all enjoy at one time or another getting involved in doing some hamming for the public good. We are very good at it as evidenced by the many comments and compliments we receive from the people we help.

The Board's reasoning was that we have been approached to put on some of these events on short notice, or with a total lack of information as to what is required of us. This leads to a rather chaotic scramble for people and equipment often going down to the last minute. Another problem is getting the information about these events out to those people who may want to participate, because we all get together only about once a month at the meeting, and if it doesn't make Zero Beat, the problem is even more acute. A committee that is visible and permanent, that has all the necessary information for any member would be a great help to us all.

This committee would take input from the members as to what information they would like to have concerning the event. It would also be the group that the organizations seeking our help would contact, saving a lot of time and effort. A technical team would become a part of this group, and would hopefully put together a set of emergency tools and equipment to handle the inevitable broken mike or shorted balun, to help us maintain our effort at peak efficiency, without having to send someone home for a PL 259 or hunk of jumper wire. The job of the committee would be an extremely valuable one to all of us, and to the community as a whole. For an organization that participates in as many things as we do, it seems impossible that we have gotten along so well before.

There are those of you who in the past have coordinated for a specific event, i.e. Mike KØTER for the Walk For Mankind. This can certainly continue in the future, but now hopefully Mike will have some help. Maybe some of you out there are interested in becoming involved in the planning and execution of public service work. Here is your chance. This committee has the potential to become one of the most vital in the organization. I would like to encourage any and all of you to get in there and lend your expertise, experience and imagination. If you are interested in serving on the committee, or even being in charge, make it known to one of the Board members, and we will be glad to sign you up and get the show on the road.

73's
Don KBØKQ

FOR SALE: Collins 75S1 Receiver \$250, Heath SB620 scanner scope \$100, Heath QF-1 Q Multiplier \$10, Tektronix 321 battery powered miniscope \$75, Heath DMM \$50, Cushcraft 10 elm-144 MHz OSCAR antenna \$40, Spectrum elm-432 MHz OSCAR antenna \$50. Call Larry 596-8883 aft 6 PM.

FOR SALE: Ten Tec Argonaut 80-10M P.S., Crystal Calibrated, external SWR meter, mike, good condition, \$200/offer. Dave, KAØCEP, 576-5181.

Channel Communications

20-G EAST MOUNTVIEW LANE
COLORADO SPRINGS, COLORADO 80907

(303) 588-8704

- COMMERCIAL & PERSONAL 2-WAY MOBILE RADIO
- USED & CONSIGNMENT HF, VHF, & UHF COMM. EQUIPMENT
- REPAIR & CALIBRATION OF COMMUNICATIONS & OTHER ELECTRONICS EQUIPMENT

Dick Kohlhaas, W5UDM

PPFMA

The old "Toob Type" 16/76 machine is being replaced with a solid state machine. Because of the high level of RFI and intermodulation problems at the present site, the new equipment will be put on the air initially at an alternate, more accessible location. Should a reasonable period of operation prove this site superior to Cheyenne Mountain, consideration is being given to permanent change of location.

The UHF machine associated with the 37/97 repeater is also being replaced with solid state equipment. The equipment has been located and the Board has approved its acquisition.

When 37/97 is being used for public/emergency service such as weather watch, athletic events, search and rescue missions and the traffic is not heavy, the repeater is being left open for general use whenever possible. Short transmissions with pauses between are imperative under these conditions. Under more severe conditions such as a weather warning, search & rescue mission or events requiring a controlled net the beeper (1000 cycle tone burst, 4 second spacing) is being activated. One realizes immediately that the machine is in emergency mode if a busy controlled net is in operation, but if things are relatively quiet, the four second spacing of the tone bursts seems inadequate. We're going to try shortening the space between the tone bursts in an effort to make them more effective.

We unfortunately missed the last issue of Φ Beat. Consequently, the following public service events are from the period which would have been covered by the previous issue plus those that occurred in the current period. For the sake of brevity, some of the less significant ones must be omitted.

6-2-80: WB0DUL, Dick reported a mule wandering around Ute Pass to the Teller County Sheriff's Office via 37/97 and W0JAW.

6-17-80: the 37/97 and 34/94 repeaters were used extensively in a search near Bailey, Colorado for an 80 year old man. The S & R Communications Trailer was operated on location by KB5KO, Don during the search.

6-19-80: Our first major Weather net this season involving SERVCOM was activated and controlled by WB0TIB, Bud; K0DJ, Bob; and N0BZ. Many front range and plains area hams reported weather information to the National Weather Service via the net.

7-1-80: W0NR, A.J. reported a tractor-trailer on fire 16 miles south of Fountain, Colorado on I-25 via 37/97 and N0AFR. The State Patrol and a MAST helicopter responded.

7-2-80: WB0TIB, Bud, activated SERVCOM on 37/97 for a severe weather net. Front range and plains area amateurs passed weather information to the National Weather Service via Bud and K0YXC, Keith who was operating the station at the National Weather Service facility on Peterson Field.

7-4-80: The 37/97 repeater was used by nine Springs area amateurs to provide communications for the medical teams supporting the Pike's Peak Hill Climb. N0BZ, Tom; and W0YNE, Warren operated a controlled net from the S & R Communications Trailer at the start line. W0MBZ, WA0QQT, WB2ZOH, WB2JYU, WB0KKI, WB8YDD, and N0AMP each with a doctor and nurse were stationed along the race course at strategic locations. As anyone monitoring could tell, things went quietly and very well. There were no serious medical problems among the spectators and only one driver required transportation to a hospital for minor injuries.

7-17-80: WB2ZOH, Rob called for assistance via 37/97 and W0JAW for an injured fellow construction worker. Colorado Springs Fire Department and A1 ambulance responded.

The two severe weather nets addressed earlier remind me that it's appropriate to mention there is a two meter station permanently installed in the National Weather Service facility at Peterson Field. WB0TIB, Bud, with some help from N0ATE, Bill did the installation. The equipment consists of a KDK 2016 donated by W0FPT, Coe; a 25 amp/hour Nicad battery donated by W0VO, Ed; coaxial cable donated by Walker Electronics and an antenna purchased with SERVCOM funds. Coe was partially reimbursed for the cost of the KDK by donation. Ol' Herb and the troops can now monitor two meter activity as required and the closest ham can join them, when things get tough, plug in the mike and get on the air.

In closing, thanks to W0YNE, Warren for locating and resolving the interference problem we had in May and June on 37/97. It was caused by a TV set which has been moved to another location.

73,
W0MBZ

Typesetting courtesy Letter Setters

Centennial ★ ★ RCA ELECTRONICS

715 N. Weber, P.O. Box 1777, Colorado Springs 80901

PHONE: (303) 633-4666

BK PRECISION

The Cooper Group,

BELDEN

**GC
ELECTRONICS**

MALLORY

TRW

VIZ

WIRELESS

A.R.R.L.

Largest Supply of Electronic Parts
in Southern Colorado

MEETING NOTICE

The August meeting of the Pikes Peak Radio Amateur Association will be held at 7:30 p.m. on August 13, 1980 at Sabin Jr. High School. The program will be given by WA9WWS on non-ionizing radiation. All members and interested persons are invited to attend. Also discussed will be the PPRAA Club picnic to be held later in August. Plan to be there!

Notice to Advertisers:

Please keep Zero Beat informed as to the status of items run for sale. If an item is sold, please notify us so that we may delete it so as not to confuse people. Commercial advertisers are welcome to update or change the content of their ads at any time.

ZERO BEAT NEEDS YOUR ARTICLES!!

Please submit any and all pieces on any subject that would be of interest to the readers of Zero Beat. This paper is only as good as what's in it. **CONTRIBUTE!!**



Ø BEAT



COLO. SPRINGS,
COLORADO

Jim Colvin NØAVY
4610 Topaz
Colorado Springs, CO 80918



FIRST CLASS MAIL

StevSchaarschmidt K0CI
Don Schaarschmidt W00TZ
2208 E Greenwich Cir
Colo Spgs CO 80903